

Class : XIIth Date : Subject : PHYSICS DPP No. : 5

## Topic :-Nuclei

1.	A radioactive material has after 30 days	a half life of 10 days.	What fraction of the m	aterial would remain		
	a) 0.5 b)	0.25	c) 0.125	d)0.33		
2.	When a ${}_{4}Be^{9}$ atom is bombarded with $\alpha$ – particles, one of the products of nuclear					
	transmutation is ${}_{6}C^{12}$ . The	e other is				
	a) $_{-1}e^0$ b)	$_1H^1$	c) $_{1}D^{2}$	d) $_{0}n^{1}$		
3.	Fission of nuclei is possible	e because the binding	g energy per nucleon in	them		
	a) Increases with mass number at high mass numbers					
	b) Decreases with mass nu <mark>mber at high mas</mark> s numbers					
	c) Increases with mass num <mark>ber a</mark> t low mass numbers					
	d) Decreases with mass nu	i <mark>mber</mark> at low <mark>mass</mark> nu	mbers			
4.	To explain his theory, Boh	r used				
	a) Conservation of linear n	n <mark>omentum</mark>	b) Conservation of ang	ular momentum		
	c) Conservation of quantum	m <mark> freq</mark> uency	d) Conservation of ene	rgy		
5.	A radioactive nucleus emit	t <mark>s a be</mark> ta particle. The	parent and daughter n	uclei are		
	a) Isotopes b)	Isotones	c) Isomers	d) Isobars		
6.	Nuclear fission experiments show that the neutrons split the uranium nuclei into two					
	fragments of about same size. This process is accompanised by the emission of several					
	a) Protons and positrons		b) $\alpha$ -particles			
	c) Neutrons		d) Protons and $\alpha$ -particles			
7.	The shortest wavelength in the Lyman series of hydrogen spectrum is 912Å corresponding to a					
	photon energy of 13.6 eV.	The shortest waveler	igth in the Balmer serie	es is about		
	a) 3648 A b)	8208 A	c) 1228 A	d) 6566 A		
8.	The rest energy of an electron is 0.511 <i>MeV</i> . The electron is accelerated from rest to a velocity					
	0.5 <i>c</i> . The change in its ene	ergy will be		<b></b>		
•	a) 0.026 <i>MeV</i> b)	0.051 <i>MeV</i>	c) 0.079 <i>MeV</i>	d)0.105 <i>MeV</i>		
9.	In any fission process the ratio $\frac{\text{mass of fission products}}{\text{mass of parent nucleus}}$ is					
	a) Less than 1		b) greater than 1			
	c) Equal to 1		d) Depends on the mass of parent nucleus			
10.	Half-life of a substance is 1	fe of a substance is 10 years. In what time, it becomes $\frac{1}{4}th$ part of the initial amount				
	a) 5 <i>years</i> b)	10 years	c) 20 years	d) None of these		

11.	$\alpha$ – particles of energy 400 KeV are bombarded on nucleus of $_{82}Pb$ . In scattering of $\alpha$ –					
	particles, its minimum distance from nucleus will be					
	a) 0.59 <i>nm</i> b	) 0.59 Å	c) 5.9 <i>pm</i>	d) 0.59 <i>pm</i>		
12.	. $K_{\alpha}$ and $K_{\beta}$ X-rays are emitted when there is a transition of electron between the levels					
	a) $n = 2$ to $n = 1$ and $n = 3$ to $n = 1$ respectively					
	b) $n = 2$ to $n = 1$ and $n = 3$ to $n = 2$ respectively					
	c) $n = 3$ to $n = 2$ and $n = 4$ to $n = 2$ respectively					
	d) $n = 3$ to $n = 2$ and $n = 4$ to $n = 3$ respectively					
13.	The ratio of the radii of th	$_{12}$ nuclei $_{13}$ Al $^{27}$ and $_{52}$	Te <sup>125</sup> is approximately			
	a) 6:10 b	)13:52	c) 40:17	d)14:73		
14.	The fraction of the initial number of radioactive nuclei which remain undecayed after half of a					
	half-life of the radioactive sample is					
	$a) \frac{1}{b}$	<sup>1</sup>	(1) - 1	d) <sup>1</sup>		
	$\sqrt{2}$	$\frac{1}{2}$	$2\sqrt{2}$	$\frac{1}{4}$		
15.	The nucleus ${}^{115}_{48}Cd$ after two successive $eta^-$ decays will give					
	a) $_{46}^{115}Pa$ b	) $^{114}_{49}$ In	c) $\frac{113}{50}Sn$	d) $\frac{115}{50}Sn$		
16.	A radioactive nucleus (initial mass number A and atomic number Z) emits $3 \alpha$ – particles and 2					
	in daloactive nacious (ini	ciai mass number mar		par deles ana 2		
	positrons. The ratio of nu	im <mark>ber of neutrons</mark> to t	hat of protons in the fina	al nucleus will be		
	positrons. The ratio of nu a) $\frac{A-Z-8}{2}$ h	The second seco	hat of protons in the fination $A = Z = 12$	al nucleus will be $d\frac{A-Z-4}{2}$		
	positrons. The ratio of nu a) $\frac{A-Z-8}{Z-4}$ b	The second seco	hat of protons in the fination $\frac{A-Z-12}{Z-4}$	al nucleus will be $d)\frac{A-Z-4}{Z-2}$		
17.	positrons. The ratio of nu a) $\frac{A-Z-8}{Z-4}$ b Half-life of radioactive su	Sumber of neutrons to t $(\frac{A-Z-4}{Z-8})$ bstance is 3.20 h. What	hat of protons in the fination $\frac{A-Z-12}{Z-4}$ of the time taken for a	al nucleus will be d) $\frac{A-Z-4}{Z-2}$ 75% of substance to be		
17.	positrons. The ratio of nu a) $\frac{A-Z-8}{Z-4}$ b Half-life of radioactive su used?	Sumber of neutrons to the second sec	that of protons in the fination $\frac{A-Z-12}{Z-4}$ of $\frac{A-Z-12}{Z-4}$ at is the time taken for a	al nucleus will be d) $\frac{A-Z-4}{Z-2}$ 75% of substance to be		
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17.	positrons. The ratio of nu a) $\frac{A-Z-8}{Z-4}$ b Half-life of radioactive su used? a) 6.38 h b The spectral series of the	Sumber of neutrons to the second sec	that of protons in the finator $\frac{A-Z-12}{Z-4}$ of $\frac{A-Z-12}{Z-4}$ at is the time taken for a c) 4.18 day lies in the visible region of	al nucleus will be d) $\frac{A-Z-4}{Z-2}$ 75% of substance to be d) 1.2 day of the electromagnetic		
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